

AMENDMENT TO THE SPECIFICATION:

Please replace the paragraphs at the locations in the specification identified below with the following paragraphs:

At page 1, lines 9-13:

This application claims priority of the following: (a) U.S. Provisional Patent Application No. 60/403,925, filed on August 16, 2002; (b) U.S. Provisional Patent Application No. 60/403,926, filed on August 16, 2002; (c) U.S. Provisional Patent Application No. 60/403,924, filed on August 16, 2002; and (d) U.S. Patent Application No. 10/620,851, filed on July 15, 2003 (to which the present application is a continuation-in-part). These applications are fully incorporated by reference as if fully set forth herein.

At page 3, lines 22 to page 4, line 8:

In our pending U.S. Patent Application Serial No. 10/620,851 [~~Not Yet Available~~], entitled "Stamping System for Manufacturing High Tolerance Parts," filed on July 15, 2003, which is incorporated by reference in its entirety, we describe a system and process for stamping parts, such as optoelectronic assemblies, sub-assemblies and components, having tolerances within 1000 nm. Figure 1 is a schematic drawing illustrating a system 10 for stamping optoelectronic components having tolerances below 1,000 nm. The stamping system 10 includes, in part, a stamping press 20, one or a progression of stamping stations 25, and an interface system 35. Each stamping station 25 can include tools, such as a punch and die for performing a specific stamping operation on a work piece, sensors for in-line metrology and/or tool protection, and other equipment, such as a welder. The stamping stations 25 include a novel structure for guiding the punch in substantial alignment with the die with tight tolerances. Also, the stamping stations 25 are designed to minimize the number of moving components involved in the support structure in guiding the punch to the die. The stamping press 20 powers the progression of stamping stations 25. The interface system 35 facilitates coupling the force of the press 20 with the punch but structurally decoupling the press 20 from the punch. The interface system 35 also allows isolation of each stamping station so that operation at one station does not affect operation at another station.

At page 4, lines 20-25:

It is therefore desirable to have precision optoelectronic assemblies, sub-assemblies and components that are designed for manufacturability in a high-speed stamping process capable of producing parts having tolerances within 1,000 nanometers. It is also desirable to have precision optoelectronic assemblies, sub-assemblies and components that are designed for manufacturability in the stamping system described in our pending U.S. Patent Application Serial No. 10/620,851 ~~[NOT YET AVAILABLE]~~.

At page 13, lines 1-4:

The configuration of the ferrules 130 and 140 and the split sleeve 150 allow these components to be produced and assembled by a stamping process that is capable of producing parts having tolerances below 1000 nm, such as the stamping process described in our pending U.S. Patent Application Serial No. 10/620,851 ~~[Not Yet Available]~~.

At page 19, lines 14-20:

The configuration of the multi-fiber ferrules shown in Figures 19 and 23 allow the ferrules to be produced by a forging process. In our pending Application Serial No. 10/620,851 ~~[NOT YET AVAILABLE]~~, we disclose a punch (not shown) for producing a multi-fiber ferrule. The punch is capable of forging grooves 840 and 845 for nesting the optical fibers and grooves for nesting the guide pins. The tolerances on the location of the apex of the fiber grooves 840 and 845 forged using this particular punch are ± 160 nm parallel to the surface 830 and ± 190 nm perpendicular to the surface 830.

AMENDMENTS TO CLAIMS:

Claims 1-94 (Canceled)

95. (Canceled)

96. (Currently amended): ~~The optical coupling as in claim 95~~ An optical coupling for supporting at least an optical fiber in alignment with a connection device in an optoelectronic assembly, comprising:

a ferrule having a body made of metal defining at least a bore for supporting an optical fiber, wherein the body is characterized by a metal structure that is formed by a stamping process; and

a sleeve sized and shaped to slidably receive the ferrule and to couple to the connection device, so as to align the ferrule and the optical fiber supported by the ferrule relative to the connection device.

97. (Previously presented): The optical coupling as in claim 96, wherein the body of the ferrule has a cross-section that is generally uniform for an entire length of the body.

98. (Currently amended): The optical coupling as in claim 97, wherein the body of the ferrule has a cross-section that is generally at least one of circular, partially circular, rectangular, or ~~and~~ loop.

99. (Previously presented): The optical coupling as in claim 96, wherein the body of the ferrule is generally cylindrical, and the sleeve has a body that is generally cylindrical.

100. (Previously presented): The optical coupling as in claim 96, wherein the body of the ferrule defines a plurality of bores for supporting a plurality of optical fibers.

101. (Previously presented): The optical coupling as in claim 96, further comprising a guide pin extending from the ferrule for alignment with the connection device.

102. (Previously presented): The optical coupling as in claim 101, wherein the ferrule comprises a bore for receiving the guide pin.

103. (Previously presented): The optical coupling as in claim 96, wherein the ferrule includes at least one of a groove and a protrusion on its external surface and the sleeve includes at least one of a complementary protrusion or groove.

104. (Previously presented): The optical coupling as in claim 96, wherein the ferrule comprises a first ferrule half and a second ferrule half.

105. (Previously presented): The optical coupling as in claim 104, wherein the first ferrule half and the second ferrule half are maintained in a mating relationship by the sleeve.

106. (Previously presented): The optical coupling as in claim 104, wherein the first ferrule half has a structure that is substantially similar to that of the second ferrule half, each provided with at least a groove, which together define the bore for supporting the optical fiber.

107. (Previously presented): The optical coupling as in claim 104, wherein the first ferrule half and the second ferrule half are each characterized by a structure that is formed by a stamping process.

108. (Previously presented): The optical coupling as in claim 107, wherein the first ferrule half and the second ferrule half are both stamped simultaneously.

109. (Previously presented): The optical coupling as in claim 107, wherein the first ferrule half and the second ferrule half are both stamped from a single work piece.

110. (Previously presented): The optical coupling as in claim 109, wherein the single work piece is in sheet form.

111. (Previously presented): The optical coupling as in claim 109, wherein the body of the ferrule is formed by stamping and attaching two ends of the single work piece representing the first ferrule half and second ferrule half.

112. (Previously presented): The optical coupling as in claim 111, wherein the two ends are attached by welding.

113. (Previously presented): The optical coupling as in claim 104, wherein the first ferrule half has a first surface and the second ferrule half has a second surface, wherein the first ferrule half and the second ferrule half are assembled together at the first and second surfaces, and wherein the first ferrule half is attached to the second ferrule half by at least one of welding and an adhesive material provided at the edge of the first and second surfaces.

114. (Previously presented): The optical coupling as in claims 103, wherein a notch is provided at the edge of each of the first and second surfaces, and wherein the first ferrule half is attached to the second ferrule half by at least one of welding and an adhesive provided at the notches.

115. (Previously presented): The optical coupling as in claim 106, wherein the first ferrule half and the second ferrule half are each provided with a plurality of matching grooves.

116. (Previously presented): The optical coupling as in claim 115, wherein the first ferrule half and the second ferrule half are connected at an edge.

117. (Previously presented): The optical coupling as in claim 116, wherein the first ferrule half and the second ferrule half have a connected body structure that is characterized by U-shaped loop formed by looping from a generally flat material in a stamping process, having two long sections joined by a short section.

118. (Previously presented): The optical coupling as in claim 117, wherein each of the long sections defines a plurality of grooves for supporting optical fibers.

119. (Previously presented): The optical coupling as in claim 96, wherein the body of the ferrule has a periphery defining at least two distinct contact surfaces, and wherein the sleeve is sized and shaped to contact the contact surfaces on said periphery, biasing contact pressure towards the contact surfaces.

120. (Previously presented): The optical coupling as in claim 119, wherein the body of the ferrule has a generally star-shaped cross-section, defining the at least two contact surfaces against the sleeve.

121. (Previously presented): The optical coupling as in claim 120, wherein the star-shaped cross-section is characterized by a loop formed by looping from a generally flat material in a stamping process.

122. (Previously presented): The optical coupling as in 121, wherein the ferrule comprises a unitary body.

123. (Previously presented): The optical coupling as in claim 119, wherein the body of the ferrule has a generally U-shaped cross-section, comprising two long sections joined by a short section, wherein the long sections each defines the at least two contact surfaces against the sleeve.

124. (Previously presented): The optical coupling as in claim 123, wherein each of the long sections define a plurality of grooves for supporting optical fibers.

125. (Previously presented): The optical coupling as in claim 119, wherein the body of the ferrule comprises two half ferrules, each having a body characterized by a loop formed by looping from a generally flat material in a stamping process, and wherein the body of at least one

of the two half ferrules has a split along an axial direction, thereby defining at least two distinct contact surfaces against the sleeve.

126. (Previously presented): The optical coupling as in claim 96, wherein the ferrule comprises a strength member extending from the body of the ferrule, which supports a section of the fiber not received in the bore of the body.

127. (Previously presented): The optical coupling as in claim 96, wherein the connection device comprises a complementary ferrule having a body defining at least a bore for supporting another optical fiber.

128. (Previously presented): The optical coupling as in claim 127, wherein the complementary ferrule of the connection device has a structure that is substantially similar to that of the ferrule, such that the sleeve couples and aligns the ferrule and the complementary ferrule, and the optical fibers supported thereby.

129. (Previously presented): The optical coupling as in claim 96, further comprising a plurality of ferrules, each supporting an optical fiber, wherein the sleeve is sized and shaped to receive the plurality of ferrules.

130. (Previously presented): The optical coupling as in claim 104, wherein the first ferrule half and the second ferrule half each has a hollow body structure facing each other.

131. (Previously presented): The optical coupling as in claim 96, wherein the sleeve is made of metal, and is characterized by a structure that is formed by a stamping process.

132. (Previously presented): The optical coupling as in claim 131, wherein the sleeve has a cross-section that is characterized by a loop formed by stamping from a generally flat material.

133. (Previously presented): The optical coupling as in claim 132, wherein the sleeve has a structure that includes a split along an axial direction.

134. (Previously presented): The optical coupling as in claim 131, wherein the sleeve has a cross-section that is generally uniform.

135. (Previously presented): The optical coupling as in claim 131, wherein the sleeve has an end that extends beyond the ferrule, and wherein said end couples to the connection device.

136. (Currently amended): A connector for connecting first and second optical fibers in an optoelectronic assembly, comprising:

a first ferrule having a metal body supporting the first optical fiber, wherein the metal body of the first ferrule is characterized by a structure that is shaped by a stamping process;

a second ferrule having a metal body supporting the second optical fiber;

a common sleeve sized and shaped to receive the first ferrule and the second ferrule, so as to align the first ferrule relative to the second ferrule, and the first optical fiber relative to the second optical fiber.

137. (Previously presented): The connector as in claim 136, wherein at least one of the first and second ferrules comprises first and second half ferrules that together define a bore sized and shaped to receive respective one of the first and second optical fibers.

138. (Previously presented): The connector as in claim 136, wherein the common sleeve has a first end receiving the first ferrule, and a second end receiving the second ferrule.

139. (Previously presented): A connector for coupling two optical fibers in an optoelectronic assembly, comprising:

a first component configured to support a first optical fiber, comprising a first body defining a first bore for supporting the first optical fiber, wherein the first body is characterized by a first structure that is shaped by a stamping process;

a second component configured to support a second optical fiber, comprising a second body defining a second bore for supporting the second optical fiber, wherein the second body is characterized by a second structure that is shaped by a stamping process; and

a third component configured to axially align the first component and the second component, so that the first optical fiber is aligned with the second optical fiber, wherein the third component is characterized by a third structure that is shaped by a stamping process.

140. (Currently amended): A process for producing an optical coupling for supporting at least one optical fiber in alignment with a connection device in an optoelectronic assembly, comprising the steps of:

stamping a metal body to form a ferrule defining at least a bore for supporting an optical fiber; and

forming a sleeve sized and shaped to slidably receive the ferrule and to couple to the connection device, to align the ferrule and the optical fiber that is supported by the ferrule relative to the connection device.

141. (Previously presented): The process of claim 140, wherein the sleeve is made of metal, and wherein the forming step comprises the step of stamping a metal body to form the sleeve.

142. (New): An optical coupling for supporting at least an optical fiber in alignment with a connection device in an optoelectronic assembly, comprising:

a ferrule having a body made of metal, wherein the body comprises a first ferrule half and second ferrule half defining a bore for supporting an optical fiber; and

a sleeve sized and shaped to receive the ferrule and to couple to the connection device, so as to align the ferrule and the optical fiber supported by the ferrule relative to the connection device.

143. (New): An optical coupling for supporting at least an optical fiber in alignment with a connection device in an optoelectronic assembly, comprising:

a ferrule having a body defining at least a bore for supporting an optical fiber, the body characterized by a metal structure that is formed by a stamping process;

an optical fiber supported by the body; and

a sleeve coupled to the ferrule, and sized and shaped to connect to the connection device, so as to align the ferrule and the optical fiber supported by the body relative to the connection device.

144. (New): A connector coupling two optical fibers in an optoelectronic assembly, comprising:

a first component comprising a first body defining at least a bore supporting a first optical fiber, wherein the first body is characterized by a metal structure that is shaped by a stamping process; and

a second component comprising a second body supporting a second optical fiber, wherein the first body and the second body are axially aligned end-to-end, so that the first optical fiber is axially aligned with the second optical fiber.

145. (New): The connector as in claim 144, wherein the first component further comprising a third body sized and shaped to receive the second body.